

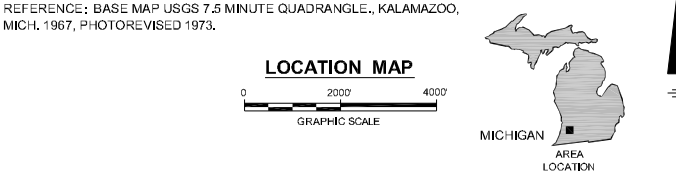
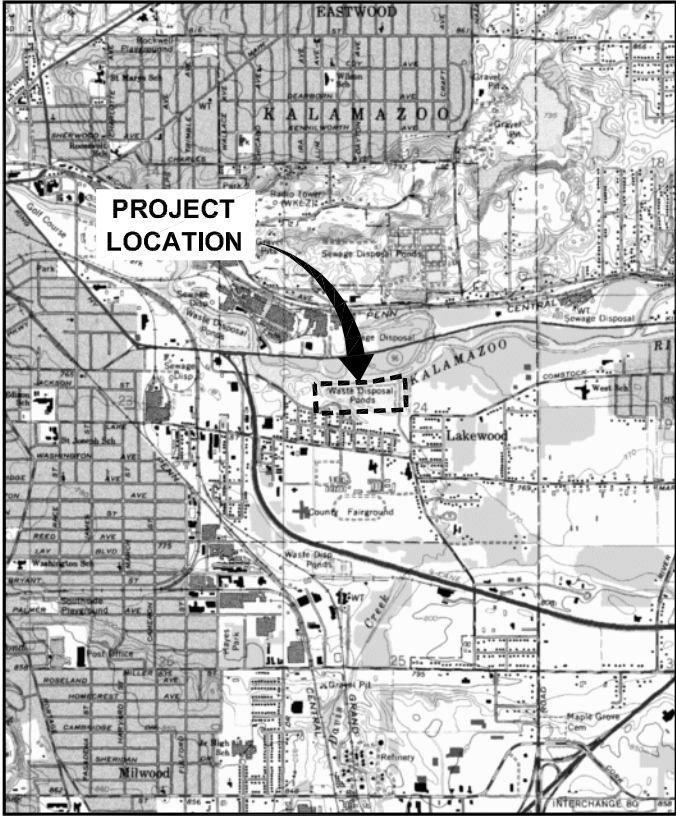
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CONSTRUCTION DRAWINGS

WILLOW BOULEVARD/A-SITE LANDFILL

OPERABLE UNIT 2

FINAL REMEDIAL DESIGN



ALLIED PAPER, INC./PORTAGE CREEK/
KALAMAZOO RIVER SUPERFUND SITE
KALAMAZOO, MICHIGAN

MARCH 2011

GEORGIA-PACIFIC LLC



ARCADIS G&M OF MICHIGAN, LLC.

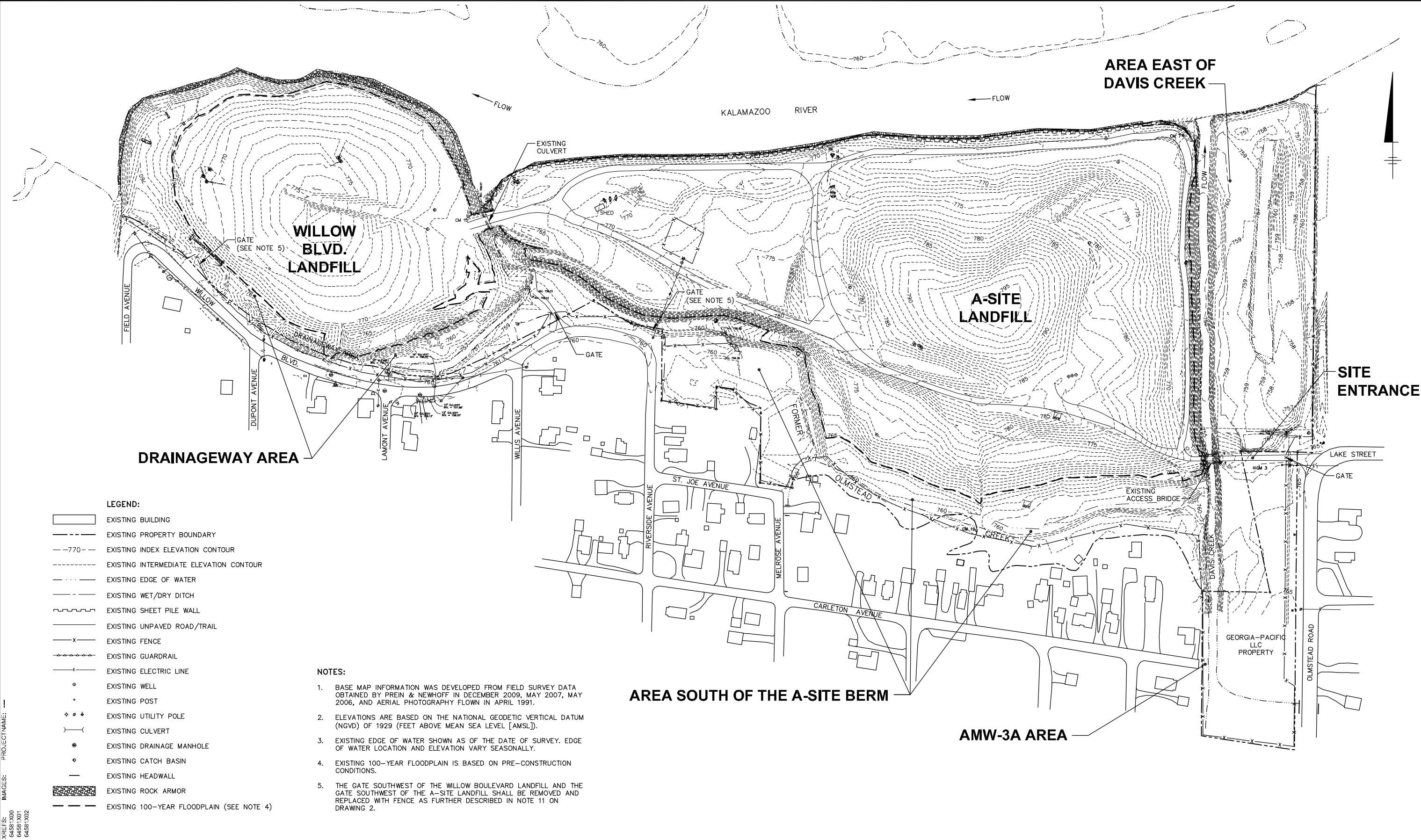
INDEX TO DRAWINGS

–	COVER SHEET
1	EXISTING SITE PLAN
2	SITE PREPARATION PLAN
3	PERIMETER EXCAVATION PLAN
4	CONSOLIDATED-MATERIAL GRADING PLAN
5	FINAL GRADING AND STORMWATER MANAGEMENT PLAN
6	LANDFILL GAS SYSTEM PLAN
7	GROUNDWATER MONITORING WELL LOCATIONS
8	RESTORATION/MITIGATION PLAN
9	SEEDING/PLANTING SPECIFICATIONS
10	SITE CROSS SECTIONS
11	BERM SECTIONS
12	BERM SECTIONS
13	FINAL COVER SECTION AND DETAILS
14	EROSION AND SEDIMENT CONTROL DETAILS
15	STORMWATER MANAGEMENT SECTION AND DETAILS
16	STORMWATER MANAGEMENT SECTION AND DETAILS
17	LANDFILL GAS SYSTEM SECTION AND DETAILS
18	GROUNDWATER MONITORING WELL DETAILS
19	RESTORATION SECTIONS AND DETAILS
20	RESTORATION SECTIONS

DRAFT

NOT FOR CONSTRUCTION

CITY: SYRACUSE DIV: GROUP: ENV/141 DB: B, GETTIS L, FORAKER A, SAMIOS LD: A, SAMIOS PIC: B, DESHIELDS PM: P, MCGUIRE TM: C, ALBUINO LYR: ON, OFF, REF
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




- LEGEND:**
- EXISTING BUILDING
 - EXISTING PROPERTY BOUNDARY
 - EXISTING INDEX ELEVATION CONTOUR
 - EXISTING INTERMEDIATE ELEVATION CONTOUR
 - EXISTING EDGE OF WATER
 - EXISTING WET/DRY DITCH
 - EXISTING SHEET PILE WALL
 - EXISTING UNPAVED ROAD/TRAIL
 - EXISTING FENCE
 - EXISTING GUARDRAIL
 - EXISTING ELECTRIC LINE
 - EXISTING WELL
 - EXISTING POST
 - EXISTING UTILITY POLE
 - EXISTING CULVERT
 - EXISTING DRAINAGE MANHOLE
 - EXISTING CATCH BASIN
 - EXISTING HEADWALL
 - EXISTING ROCK ARMOR
 - EXISTING 100-YEAR FLOODPLAIN (SEE NOTE 4)

- NOTES:**
1. BASE MAP INFORMATION WAS DEVELOPED FROM FIELD SURVEY DATA OBTAINED BY PREIN & NEWHOFF IN DECEMBER 2009, MAY 2007, MAY 2006, AND AERIAL PHOTOGRAPHY FLOWN IN APRIL 1991.
 2. ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929 (FEET ABOVE MEAN SEA LEVEL [AMSL]).
 3. EXISTING EDGE OF WATER SHOWN AS OF THE DATE OF SURVEY. EDGE OF WATER LOCATION AND ELEVATION VARY SEASONALLY.
 4. EXISTING 100-YEAR FLOODPLAIN IS BASED ON PRE-CONSTRUCTION CONDITIONS.
 5. THE GATE SOUTHWEST OF THE WILLOW BOULEVARD LANDFILL AND THE GATE SOUTHWEST OF THE A-SITE LANDFILL SHALL BE REMOVED AND REPLACED WITH FENCE AS FURTHER DESCRIBED IN NOTE 11 ON DRAWING 2.

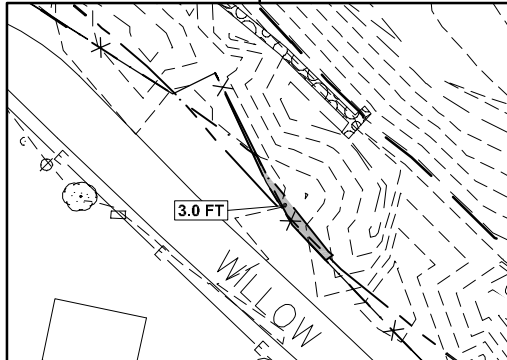
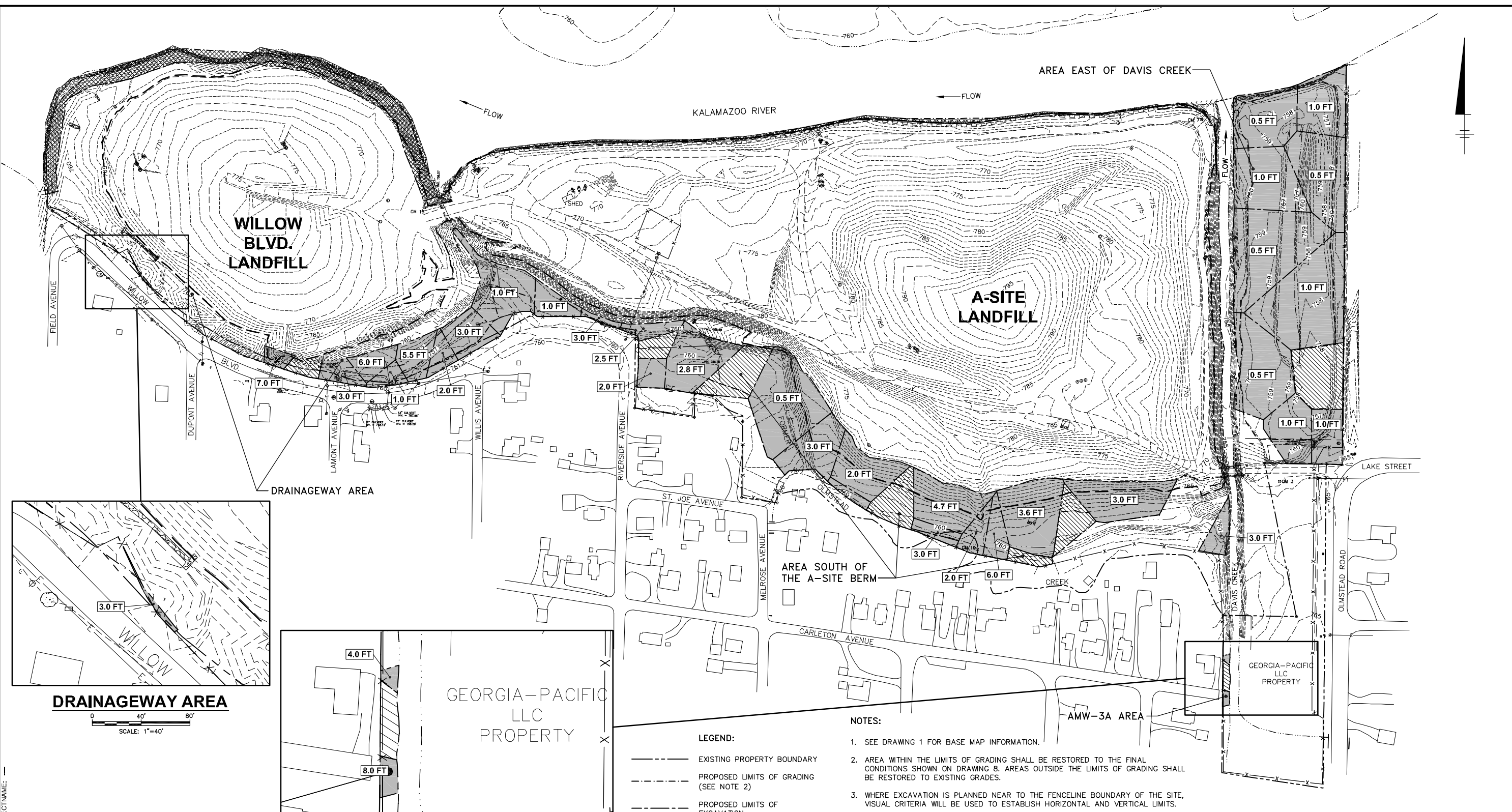
<p>1"=100'</p> <p>THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.</p> <p>USE TO VERIFY REPRODUCTION SCALE</p>		<table border="1"><thead><tr><th>No.</th><th>Date</th><th>Revisions</th><th>By</th><th>Ckd</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></tbody></table>		No.	Date	Revisions	By	Ckd						<p>Professional Engineer's Name WILLIAM A. RANKIN</p> <p>Professional Engineer's No. 6201044550</p> <table border="1"><tr><td>State MI</td><td>Date Signed</td><td>Project Mgr. PNM</td></tr><tr><td>Designed by CAA</td><td>Drawn by BGJ</td><td>Checked by PHB</td></tr></table>		State MI	Date Signed	Project Mgr. PNM	Designed by CAA	Drawn by BGJ	Checked by PHB	<p>DRAFT</p> <p>NOT FOR CONSTRUCTION</p>		<p>ARCADIS</p> <p>ARCADIS G&M OF MICHIGAN, LLC.</p>		<p>GEORGIA-PACIFIC LLC • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE - KALAMAZOO, MICHIGAN</p> <p>WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 FINAL REMEDIAL DESIGN</p>		<p>ARCADIS Project No. B0064581.0001.00670</p> <p>Date MARCH 2011</p> <p>ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse, NY 13214 Tel. 315.446.9120</p>		<p>1</p>
No.	Date	Revisions	By	Ckd																										
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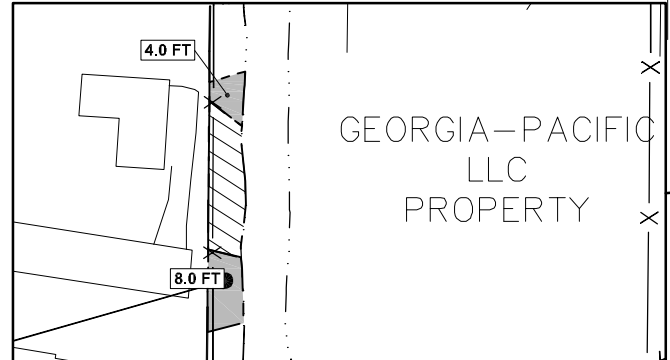
	EXISTING PROPERTY BOUNDARY
	EQUIPMENT STAGING AREA
	CONSTRUCTION DECONTAMINATION AREA
	SILT FENCE/APPROXIMATE LIMIT OF WORK
	SILT CURTAIN
	EXISTING 100-YEAR FLOODPLAIN
	DETAIL REFERENCE NUMBER
	DRAWING REFERENCE NUMBER

1. SEE DRAWING 1 FOR BASE MAP INFORMATION.
2. EXISTING UTILITY POLES, FENCES, OVERHEAD WIRES, VEGETATION, AND STONE ARMOR WITHIN LIMITS OF WORK SHALL BE REMOVED PRIOR TO OR DURING CONSTRUCTION.
3. EXISTING CULVERTS WITHIN AND ADJACENT TO LIMITS OF WORK SHALL BE PROTECTED DURING CONSTRUCTION WITH TEMPORARY EROSION CONTROL MEASURES (I.E., SILT FENCE, HAY BALES, ETC.) TO REDUCE THE POTENTIAL FOR MIGRATION OF SEDIMENTS AND DEBRIS INTO AND OUT OF THE CULVERT.
4. UNDERGROUND PIPES THAT MAY BE CONNECTED TO CONCRETE STRUCTURES IDENTIFIED FOR DEMOLITION SHALL BE PLUGGED AND ABANDONED IN PLACE.
5. ADDITIONAL SILT FENCE SHALL BE INSTALLED DURING CONSTRUCTION AS REQUIRED AROUND THE LIMITS OF WORK.
6. TEMPORARY ACCESS ROADS SHALL BE CONSTRUCTED WITHIN THE LIMITS OF WORK AS NECESSARY DURING CONSTRUCTION.
7. EXISTING ACCESS GATE SHALL BE MAINTAINED TO FACILITATE ENTRY TO THE SITE FOR EMERGENCY PURPOSES ONLY.
8. ALTERNATIVES FOR SEDIMENT BARRIERS ALONG THE WILLOW BOULEVARD LANDFILL, SUCH AS SHEETING, MAY BE USED.
9. INSTALLATION OF EROSION AND SEDIMENT CONTROL FEATURES SHALL BE IMPLEMENTED IN PHASES AND AS NECESSARY WITHIN ACTIVE WORK AREAS.
10. ALL EXISTING FENCING SURROUNDING THE SITE SHALL BE MAINTAINED. IN THE EVENT THAT ANY EXISTING FENCING MUST BE REMOVED OR ARE DISTURBED DURING CONSTRUCTION, FENCE SHALL BE REPLACED WITH NEW MATERIALS IN LIKE KIND AT THE SAME LOCATION. REMOVAL AND REPLACEMENT OF FENCE SHALL BE COORDINATED WITH THE OWNER PRIOR TO REMOVAL.
11. THE LEGEND FOR EXISTING FEATURES (I.E., FENCE LINE, PROPERTY LINE, ETC.) IS PROVIDED ON DRAWING 1.

CITY: SYRACUSE DIV/GROUP: ENV/141 DB: B. GETTIS L. FORAKER A. SAMIOS LD: A. SAMIOS PIC: B. DESHELDS PM: P. MCGUIRE TM: C. ALBUNIO LYR: ON/OFF/REF*
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DRAINAGEWAY AREA
0 40' 80'
SCALE: 1"=40'



AMW-3A AREA
0 40' 80'
SCALE: 1"=40'

- LEGEND:**
- EXISTING PROPERTY BOUNDARY
 - - - PROPOSED LIMITS OF GRADING (SEE NOTE 2)
 - - - PROPOSED LIMITS OF EXCAVATION
 - [Hatched Box] SETBACK EXCAVATION
 - [Box with 1.0 FT] PROPOSED AREA AND DEPTH OF EXCAVATION (SEE NOTE 3)
 - [Hatched Box] SUPPLEMENTAL EXCAVATION (SEE NOTE 4)
 - - - EXISTING 100-YEAR FLOODPLAIN

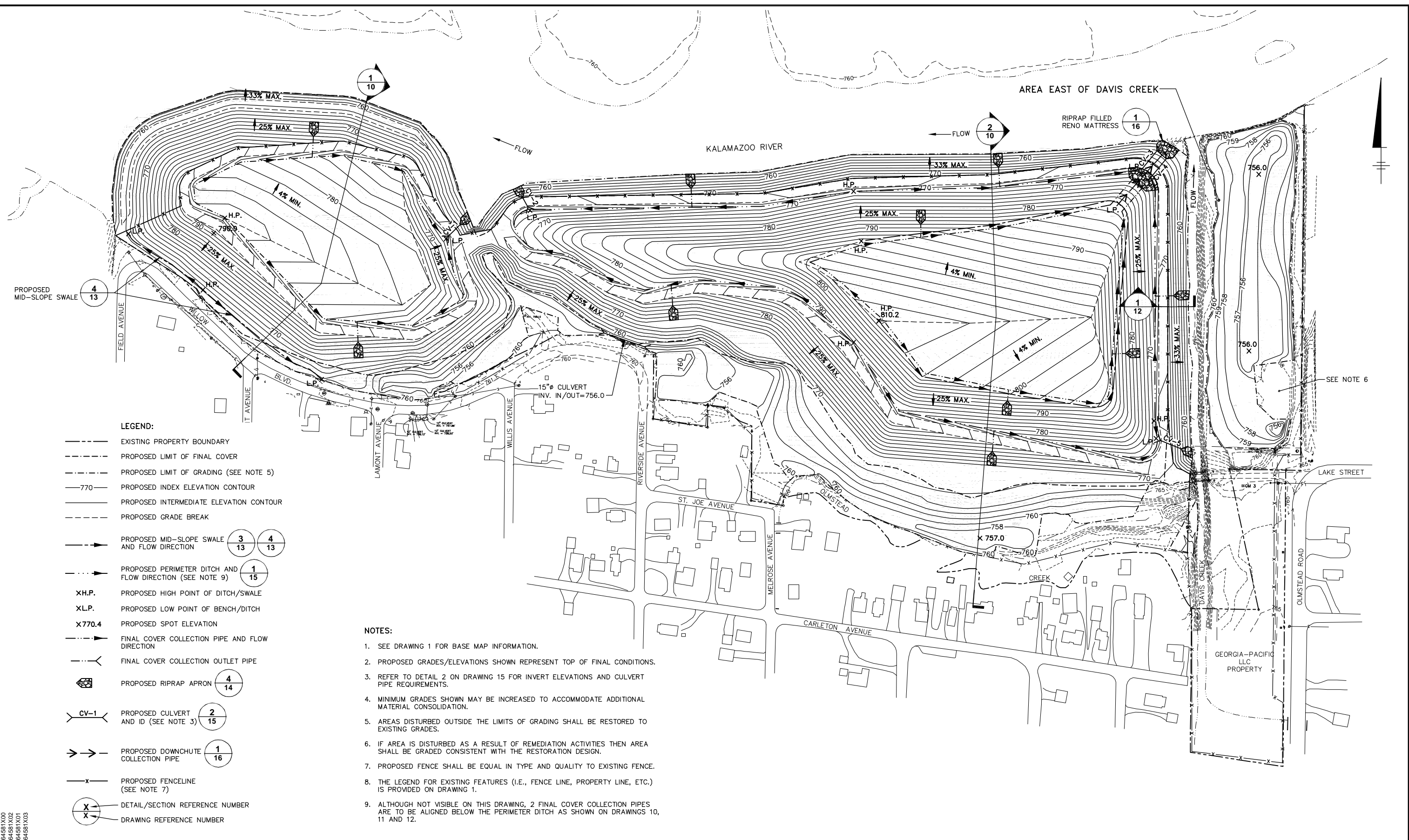
- NOTES:**
- SEE DRAWING 1 FOR BASE MAP INFORMATION.
 - AREA WITHIN THE LIMITS OF GRADING SHALL BE RESTORED TO THE FINAL CONDITIONS SHOWN ON DRAWING 8. AREAS OUTSIDE THE LIMITS OF GRADING SHALL BE RESTORED TO EXISTING GRADES.
 - WHERE EXCAVATION IS PLANNED NEAR TO THE FENCELINE BOUNDARY OF THE SITE, VISUAL CRITERIA WILL BE USED TO ESTABLISH HORIZONTAL AND VERTICAL LIMITS.
 - EXCAVATION/HANDLING OF MATERIAL MAY BE INCLUDED FOR CONTINUITY BETWEEN ADJOINING EXCAVATION AREAS. HOWEVER SAMPLE RESULTS DO NOT INDICATE PCBs IN THESE AREAS.
 - ALL LARGE DEBRIS (E.G., CONCRETE, RIPRAP) TO BE PLACED WITHIN LIMITS OF CONSOLIDATION. LARGE DEBRIS SHALL BE PLACED IN AREAS THAT REQUIRE FILL DEPTHS THAT WILL PROVIDE FOR A MINIMUM OF 12 INCHES OF GRADABLE FILL ABOVE THE DEBRIS PRIOR TO INSTALLATION OF THE FINAL COVER.
 - THE LEGEND FOR EXISTING FEATURES (I.E., FENCE LINE, PROPERTY LINE, ETC.) IS PROVIDED ON DRAWING 1.

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.		USE TO VERIFY REPRODUCTION SCALE		Professional Engineer's Name WILLIAM A. RANKIN Professional Engineer's No. 6201044550 State MI Date Signed Project Mgr. PNM Designed by DA Drawn by KMD Checked by PHB	
THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REPRODUCED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.		DRAFT NOT FOR CONSTRUCTION		 ARCADIS G&M OF MICHIGAN, LLC.	
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ARCADIS Project No. B0064581.0001.00670 B0064582.0001.00670 Date MARCH 2011 ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse, NY 13214 Tel. 315.446.9120				3	

CITY: SYRACUSE DIV/GRP: ENV/141 DB: B. GETTS L. FORAKER A. SAMIOS LD: A. SAMIOS PIC: B. DESHIELDS PM: P. MCGUIRE TM: C. ALBUINO LTR: ON="OFF"=REF.
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PROJECTNAME: ---
IMAGES: ---

XREFS:
64581X00
64581X01
64581X02
64581X03



LEGEND:

- EXISTING PROPERTY BOUNDARY
- PROPOSED LIMIT OF FINAL COVER
- PROPOSED LIMIT OF GRADING (SEE NOTE 5)
- 770 --- PROPOSED INDEX ELEVATION CONTOUR
- PROPOSED INTERMEDIATE ELEVATION CONTOUR
- PROPOSED GRADE BREAK

- PROPOSED MID-SLOPE SWALE AND FLOW DIRECTION (3/13, 4/13)

- PROPOSED PERIMETER DITCH AND FLOW DIRECTION (1/15)

- X.H.P. PROPOSED HIGH POINT OF DITCH/SWALE

- X.L.P. PROPOSED LOW POINT OF BENCH/DITCH

- X 770.4 PROPOSED SPOT ELEVATION

- PROPOSED FINAL COVER COLLECTION PIPE AND FLOW DIRECTION

- PROPOSED FINAL COVER COLLECTION OUTLET PIPE

- PROPOSED RIPRAP APRON (4/14)

- CV-1 PROPOSED CULVERT AND ID (SEE NOTE 3) (2/15)

- PROPOSED DOWNCHUTE COLLECTION PIPE (1/16)

- PROPOSED FENCELINE (SEE NOTE 7)

- X --- DETAIL/SECTION REFERENCE NUMBER
- X --- DRAWING REFERENCE NUMBER

NOTES:

- SEE DRAWING 1 FOR BASE MAP INFORMATION.
- PROPOSED GRADES/ELEVATIONS SHOWN REPRESENT TOP OF FINAL CONDITIONS.
- REFER TO DETAIL 2 ON DRAWING 15 FOR INVERT ELEVATIONS AND CULVERT PIPE REQUIREMENTS.
- MINIMUM GRADES SHOWN MAY BE INCREASED TO ACCOMMODATE ADDITIONAL MATERIAL CONSOLIDATION.
- AREAS DISTURBED OUTSIDE THE LIMITS OF GRADING SHALL BE RESTORED TO EXISTING GRADES.
- IF AREA IS DISTURBED AS A RESULT OF REMEDIATION ACTIVITIES THEN AREA SHALL BE GRADED CONSISTENT WITH THE RESTORATION DESIGN.
- PROPOSED FENCE SHALL BE EQUAL IN TYPE AND QUALITY TO EXISTING FENCE.
- THE LEGEND FOR EXISTING FEATURES (I.E., FENCE LINE, PROPERTY LINE, ETC.) IS PROVIDED ON DRAWING 1.
- ALTHOUGH NOT VISIBLE ON THIS DRAWING, 2 FINAL COVER COLLECTION PIPES ARE TO BE ALIGNED BELOW THE PERIMETER DITCH AS SHOWN ON DRAWINGS 10, 11 AND 12.

1"=100'
0 100' 200'

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Professional Engineer's Name
WILLIAM A. RANKIN
Professional Engineer's No.
6201044550
State
MI
Date Signed
Project Mgr.
PNM
Designed by
CAA
Drawn by
AGS
Checked by
PHB

DRAFT
NOT FOR
CONSTRUCTION

ARCADIS
ARCADIS G&M OF MICHIGAN, LLC.

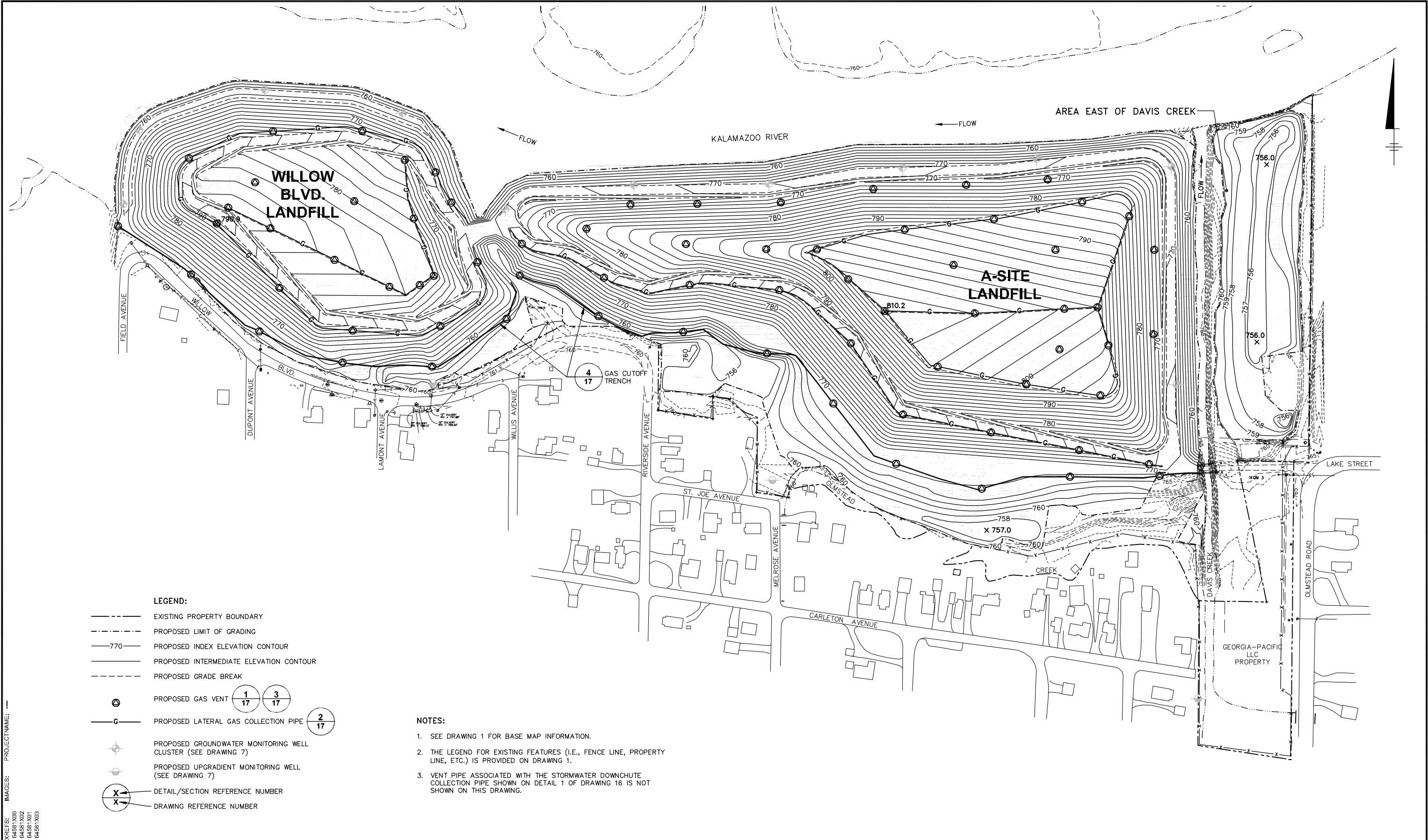
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WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 FINAL REMEDIAL DESIGN

FINAL GRADING AND STORMWATER MANAGEMENT PLAN

ARCADIS Project No.
B0064581.0001.00670
B0064582.0001.00670
Date
MARCH 2011
ARCADIS
6723 Towpath Road
P.O. Box 66
Syracuse, NY 13214
Tel. 315.446.9120

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PROJECT NAME: --
XREFS: 64581.X00
64581.X01
64581.X02
64581.X03



- LEGEND:**
- EXISTING PROPERTY BOUNDARY
 - - - PROPOSED LIMIT OF GRADING
 - 770--- PROPOSED INDEX ELEVATION CONTOUR
 - PROPOSED INTERMEDIATE ELEVATION CONTOUR
 - - - PROPOSED GRADE BREAK
 - ⊙ PROPOSED GAS VENT 1 3
 - G— PROPOSED LATERAL GAS COLLECTION PIPE 2 17
 - ⊕ PROPOSED GROUNDWATER MONITORING WELL CLUSTER (SEE DRAWING 7)
 - ⊙ PROPOSED UPGRADIENT MONITORING WELL (SEE DRAWING 7)
 - X- DETAIL/SECTION REFERENCE NUMBER
 - X- DRAWING REFERENCE NUMBER

NOTES:

- SEE DRAWING 1 FOR BASE MAP INFORMATION.
- THE LEGEND FOR EXISTING FEATURES (I.E., FENCE LINE, PROPERTY LINE, ETC.) IS PROVIDED ON DRAWING 1.
- VENT PIPE ASSOCIATED WITH THE STORMWATER DOWNCHUTE COLLECTION PIPE SHOWN ON DETAIL 1 OF DRAWING 16 IS NOT SHOWN ON THIS DRAWING.

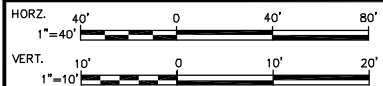
<p>1"=100'</p> <p>100' 0 100' 200'</p>		<p>Professional Engineer's Name WILLIAM A. RANKIN</p> <p>Professional Engineer's No. 6201044550</p> <p>State MI</p> <p>Date Signed</p> <p>Project Mgr. PNM</p> <p>Designed by CAA</p> <p>Drawn by AGS</p> <p>Checked by PHB</p>		<p>DRAFT</p> <p>NOT FOR CONSTRUCTION</p>	<p>ARCADIS</p> <p>ARCADIS G&M OF MICHIGAN, LLC.</p>	<p>GEORGIA-PACIFIC LLC • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE - KALAMAZOO, MICHIGAN</p> <p>WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 FINAL REMEDIAL DESIGN</p>		<p>ARCADIS Project No. B0064581.0001.00670</p> <p>Date MARCH 2011</p>	<p>6</p>
<p>THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.</p> <p>USE TO VERIFY REPRODUCTION SCALE</p>		<p>THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REPRODUCED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.</p>				<p>ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse, NY 13214 Tel. 315.446.9120</p>			



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PROJECT NAME: 11
SHEET: 10

DATE: 04/08/2010



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Professional Engineer's Name
WILLIAM A. RANKIN
Professional Engineer's No.
6201044550
State
MI
Date Signed
Project Mgr.
PNM
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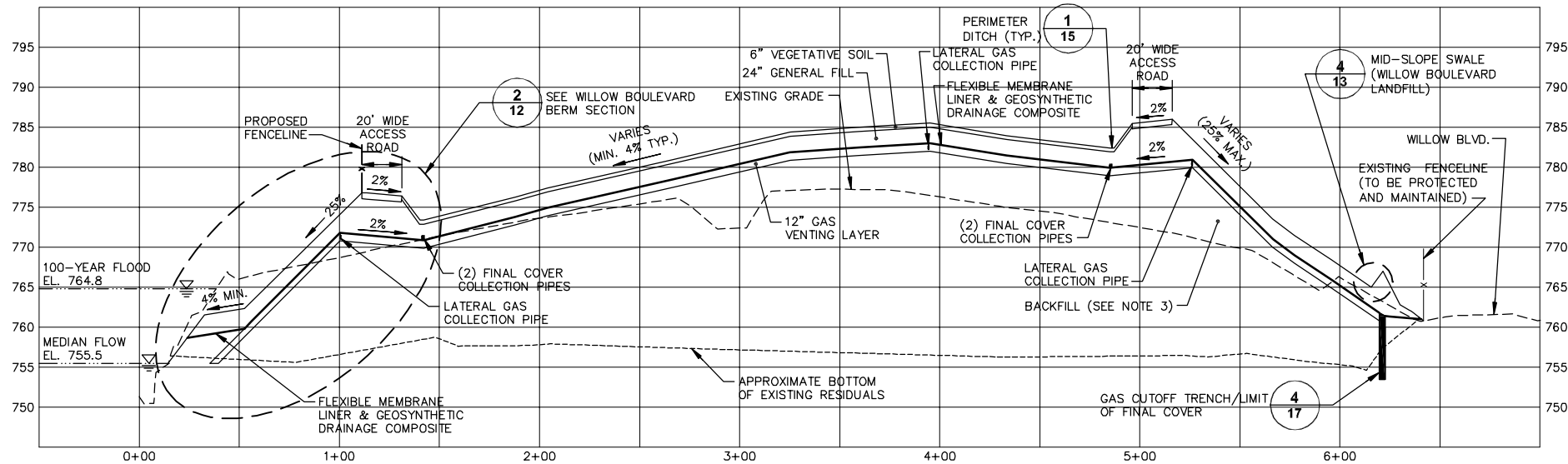


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WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 FINAL REMEDIAL DESIGN

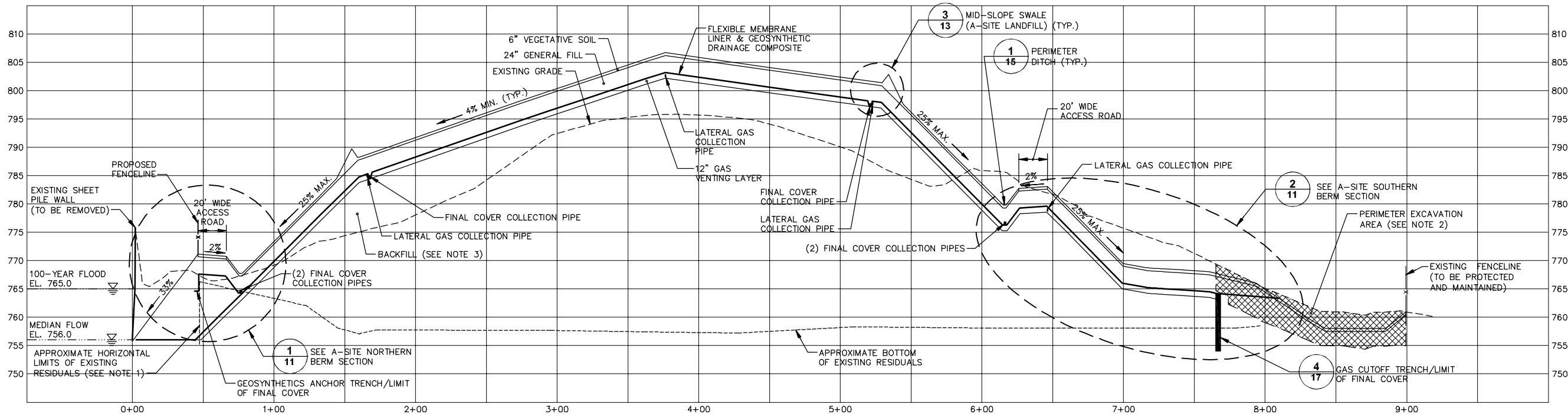
SITE CROSS SECTIONS

ARCADIS Project No.
B0064581.0001.00670
B0064582.0001.00670
Date
MARCH 2011
ARCADIS
6723 Towpath Road
P.O. Box 66
Syracuse, NY 13214
Tel. 315.446.9120



CROSS SECTION - WILLOW BOULEVARD LANDFILL 1

(4X VERTICAL EXAGGERATION)



CROSS SECTION - A SITE LANDFILL 2

(4X VERTICAL EXAGGERATION)

NOTES:

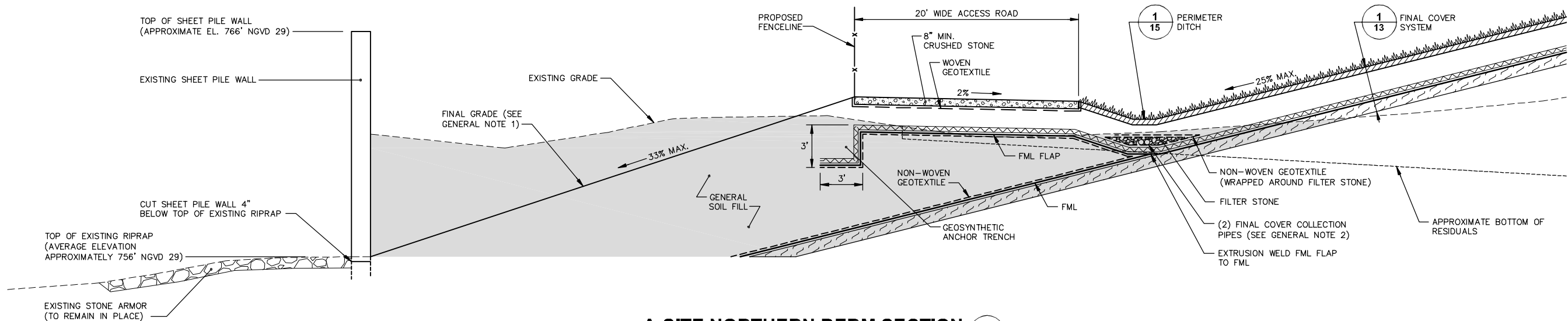
- APPROXIMATE HORIZONTAL LIMITS AND BOTTOM OF EXISTING RESIDUALS BASED ON SAMPLE DATA.
- PERIMETER EXCAVATION AREA (SHADED) BASED ON LIMITS AND DEPTHS SHOWN ON DRAWING 3.
- ALL RESIDUALS EXCAVATED FROM THE OU SHALL BE RELOCATED BENEATH THE FINAL COVER SYSTEM. BACKFILL MATERIAL PLACED OUTSIDE OF THE COVER SYSTEM SHALL BE PROVIDED BY OFFSITE SOURCES OR FROM AREAS OF THE SITE CONFIRMED TO CONTAIN CLEAN MATERIAL.
- ELEVATIONS ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (NGVD) OF 1929 (FEET ABOVE MEAN SEA LEVEL).

LEGEND:

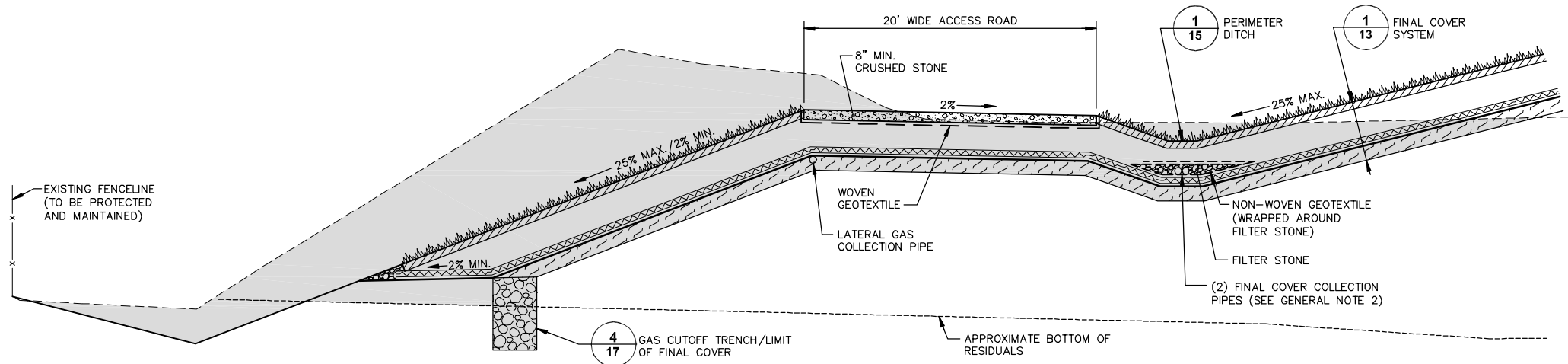
DETAIL REFERENCE NUMBER
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PROJECT NAME: --
IMAGES: --
XREFS: 04581X00



A-SITE NORTHERN BERM SECTION 1
NOT TO SCALE

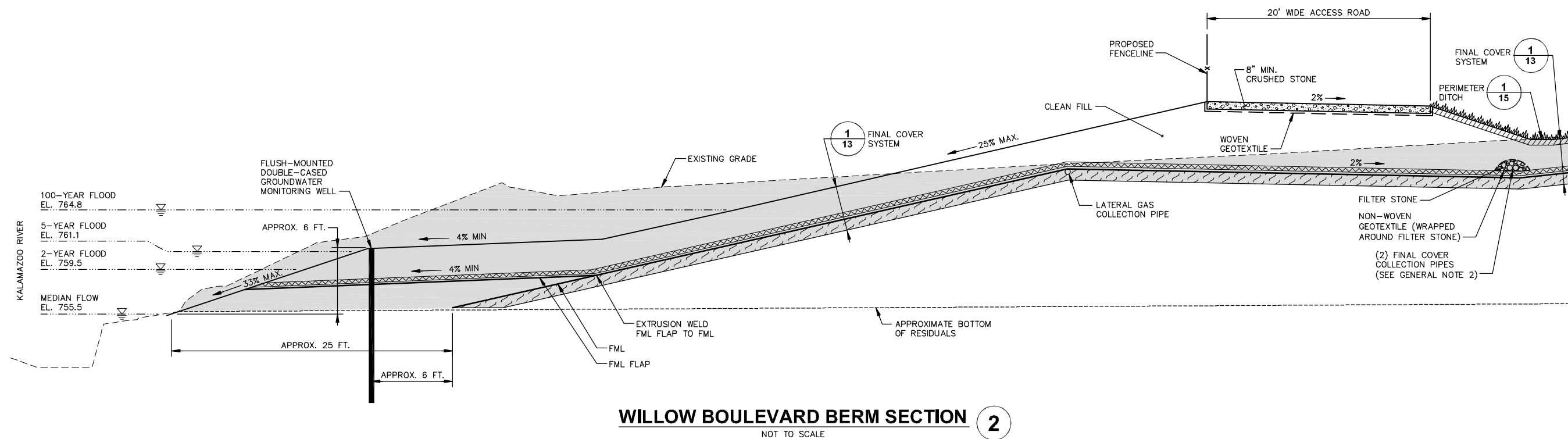
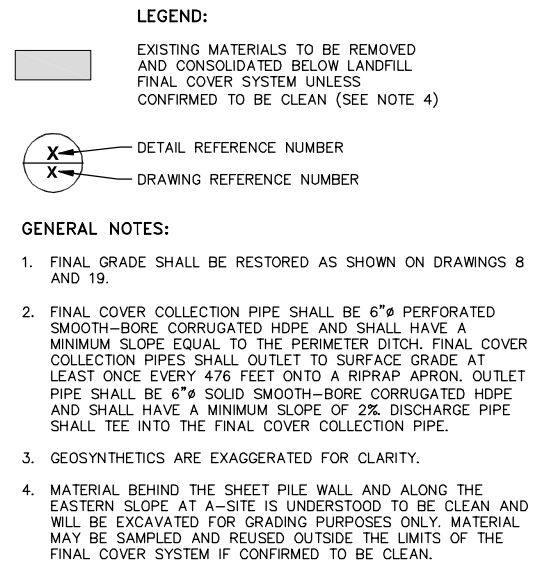


A-SITE SOUTHERN BERM SECTION 2
NOT TO SCALE

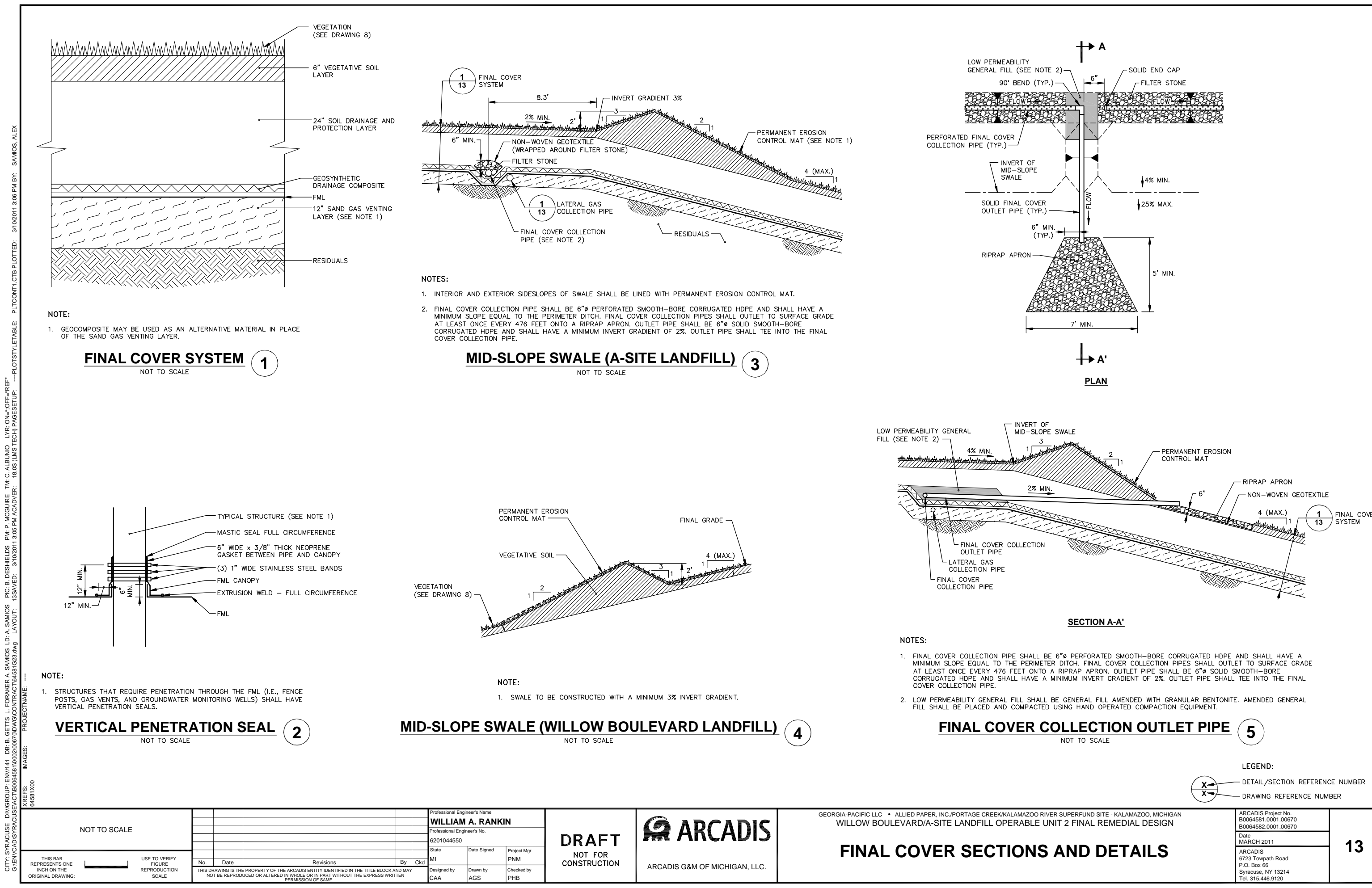
- LEGEND:**
- EXISTING MATERIALS TO BE REMOVED AND CONSOLIDATED BELOW LANDFILL FINAL COVER SYSTEM UNLESS CONFIRMED TO BE CLEAN (SEE NOTE 4)
 - DETAIL REFERENCE NUMBER
 - DRAWING REFERENCE NUMBER

- GENERAL NOTES:**
- FINAL GRADE SHALL BE RESTORED AS SHOWN ON DRAWINGS 8 AND 19.
 - FINAL COVER COLLECTION PIPE SHALL BE 6"Ø PERFORATED SMOOTH-BORE CORRUGATED HDPE AND SHALL HAVE A MINIMUM SLOPE EQUAL TO THE PERIMETER DITCH. FINAL COVER COLLECTION PIPES SHALL OUTLET TO SURFACE GRADE AT LEAST ONCE EVERY 476 FEET ONTO A RIPRAP APRON. OUTLET PIPE SHALL BE 6"Ø SOLID SMOOTH-BORE CORRUGATED HDPE AND SHALL HAVE A MINIMUM SLOPE OF 2% DISCHARGE PIPE SHALL TEE INTO THE FINAL COVER COLLECTION PIPE.
 - GEOSYNTHETICS ARE EXAGGERATED FOR CLARITY.
 - MATERIAL BEHIND THE SHEET PILE WALL AND ALONG THE EASTERN SLOPE AT A-SITE IS UNDERSTOOD TO BE CLEAN AND WILL BE EXCAVATED FOR GRADING PURPOSES ONLY. MATERIAL MAY BE SAMPLED AND REUSED OUTSIDE THE LIMITS OF THE FINAL COVER SYSTEM IF CONFIRMED TO BE CLEAN.

NOT TO SCALE								Professional Engineer's Name		WILLIAM A. RANKIN		Professional Engineer's No. 6201044550		State MI		Date Signed		Project Mgr. PNM		Designed by CAA		Drawn by AGS		Checked by PHB		Project Mgr. PNM		Professional Engineer's Name WILLIAM A. RANKIN		Professional Engineer's No. 6201044550		State MI		Date Signed		Project Mgr. PNM		Designed by CAA		Drawn by AGS		Checked by PHB		Project Mgr. PNM		Professional Engineer's Name WILLIAM A. RANKIN		Professional Engineer's No. 6201044550		State MI		Date Signed		Project Mgr. PNM		Designed by CAA		Drawn by AGS		Checked by PHB		Project Mgr. PNM		Professional Engineer's Name WILLIAM A. RANKIN		Professional Engineer's No. 6201044550		State MI		Date Signed		Project Mgr. PNM		Designed by CAA		Drawn by AGS		Checked by PHB		Project Mgr. PNM		Professional Engineer's Name WILLIAM A. RANKIN		Professional Engineer's No. 6201044550		State MI		Date Signed		Project Mgr. PNM		Designed by CAA		Drawn by AGS		Checked by PHB		Project Mgr. 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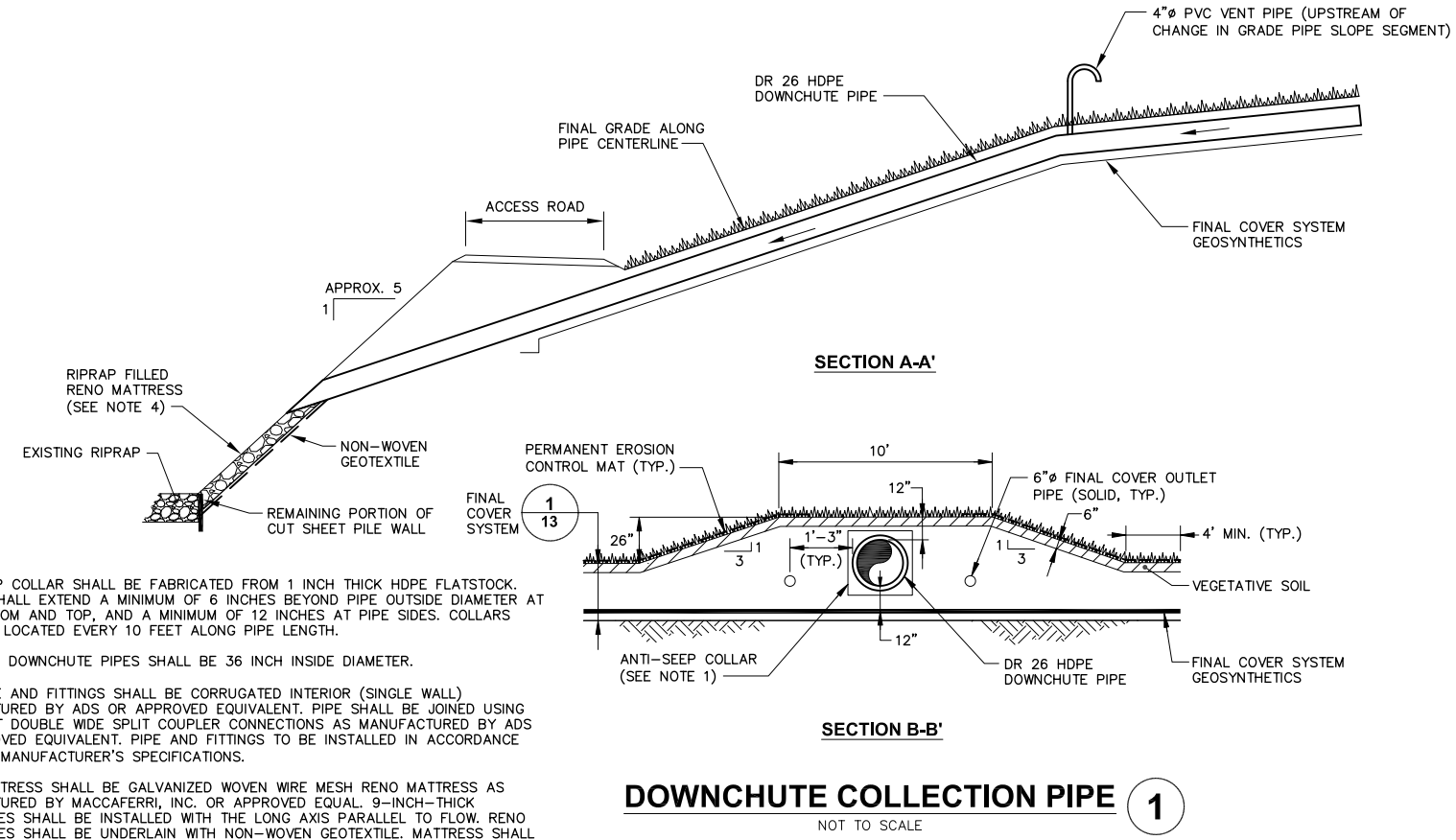
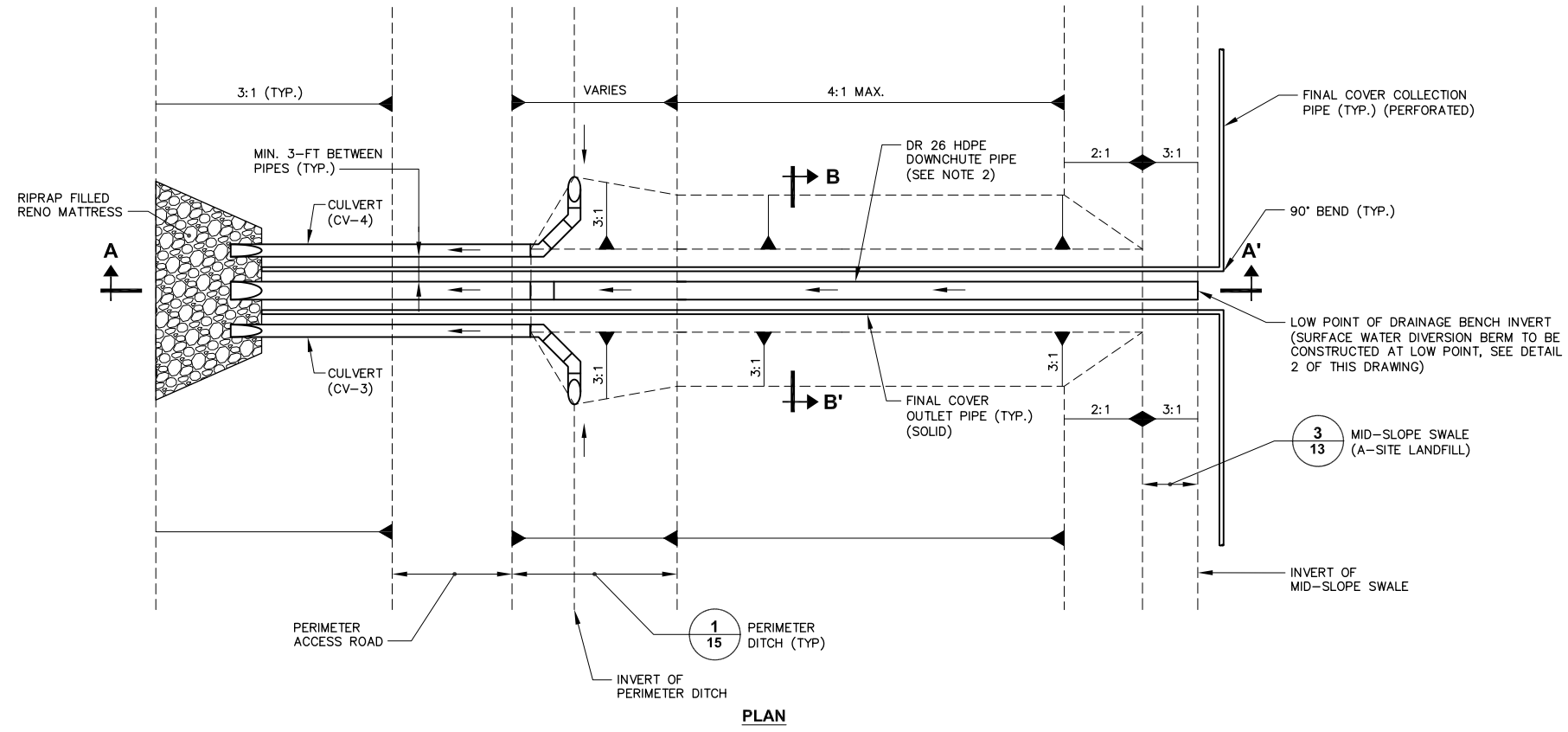


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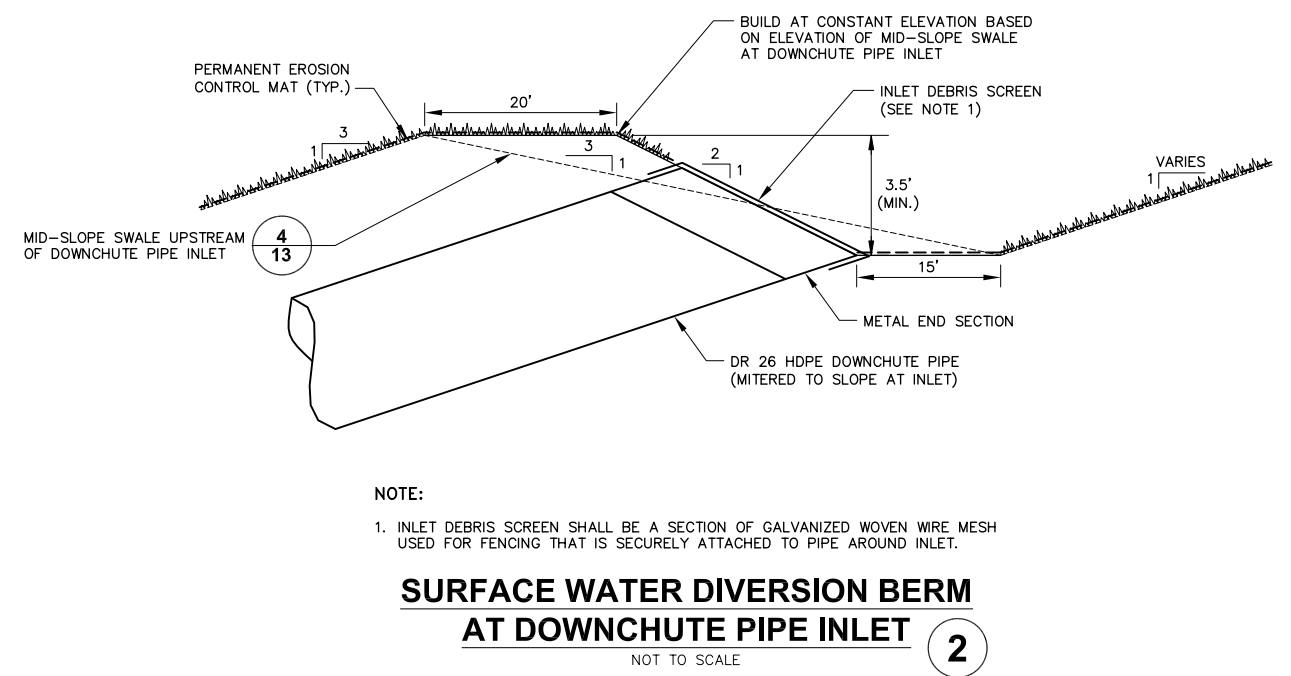


CITY: SYRACUSE DIV: GROUP: ENV/141 DR: B. GETTS S. KOVALCZYK A. SAMIOS LD: A. SAMIOS PIC: B. DESHIELDS PM: P. MCGUIRE TM: C. ALBUINO LYR: ON=OFF=REF*
G:\ENR\CAD\SYRACUSE\ACT\B0064581\0002\00670\DWG\CONTRACT\14581\G26.dwg LAYOUT: 16 SAVED: 3/9/2011 5:57 PM ACADVER: 18.05 (LMS TECH) PAGES: 16 PLOT: 3/9/2011 6:04 PM BY: SAMIOS, ALEX

PROJECT NAME: ---
IMAGES: 64581X00
XREFS: 64581X00



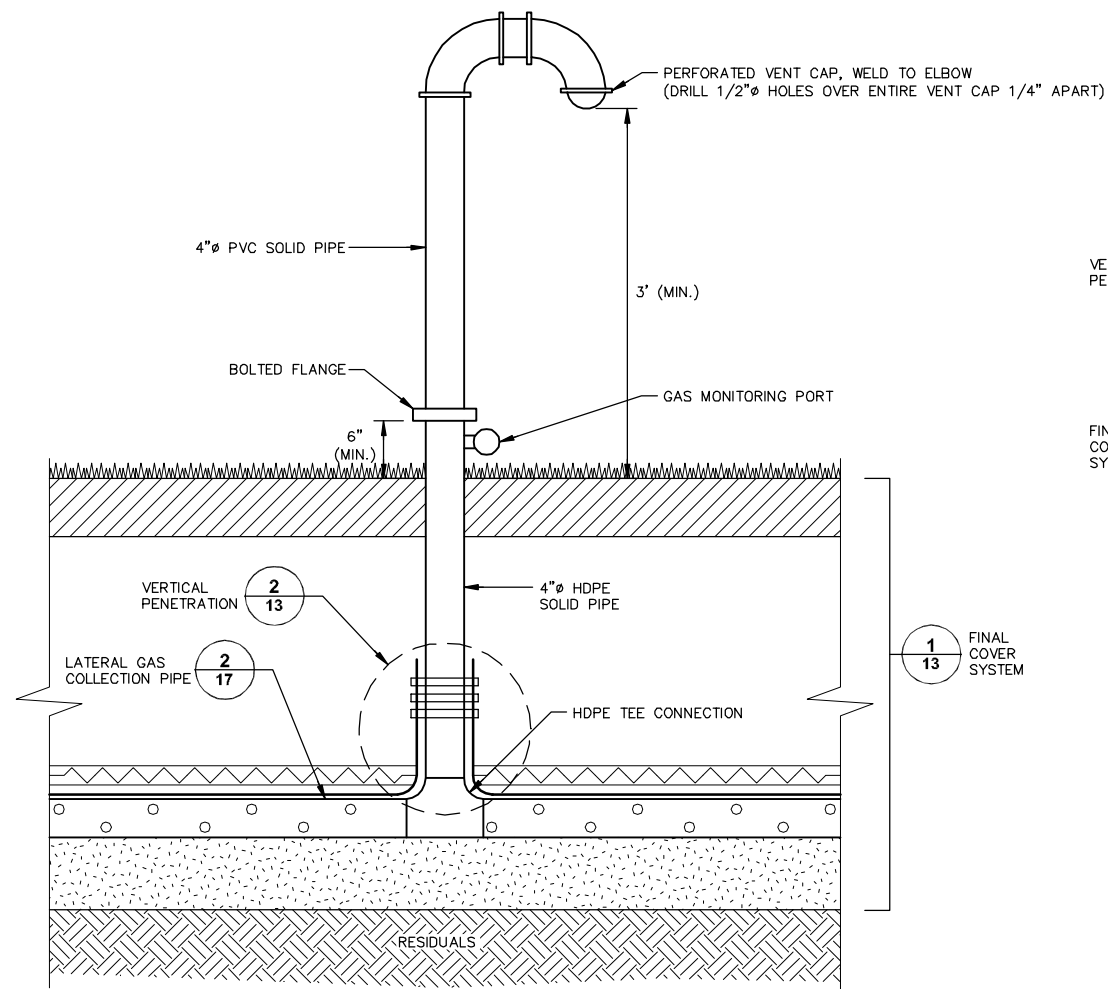
- NOTES:**
1. ANTI-SEEP COLLAR SHALL BE FABRICATED FROM 1 INCH THICK HDPE FLATSTOCK. COLLAR SHALL EXTEND A MINIMUM OF 6 INCHES BEYOND PIPE OUTSIDE DIAMETER AT PIPE BOTTOM AND TOP, AND A MINIMUM OF 12 INCHES AT PIPE SIDES. COLLARS SHALL BE LOCATED EVERY 10 FEET ALONG PIPE LENGTH.
 2. INLET AND DOWNCHUTE PIPES SHALL BE 36 INCH INSIDE DIAMETER.
 3. HDPE PIPE AND FITTINGS SHALL BE CORRUGATED INTERIOR (SINGLE WALL) MANUFACTURED BY ADS OR APPROVED EQUIVALENT. PIPE SHALL BE JOINED USING SOIL TIGHT DOUBLE WIDE SPLIT COUPLER CONNECTIONS AS MANUFACTURED BY ADS OR APPROVED EQUIVALENT. PIPE AND FITTINGS TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
 4. RENO MATTRESS SHALL BE GALVANIZED WOVEN WIRE MESH RENO MATTRESS AS MANUFACTURED BY MACCAFFERRI, INC. OR APPROVED EQUAL. 9-INCH-THICK MATTRESSES SHALL BE INSTALLED WITH THE LONG AXIS PARALLEL TO FLOW. RENO MATTRESSES SHALL BE UNDERLAIN WITH NON-WOVEN GEOTEXTILE. MATTRESS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



NOTE:

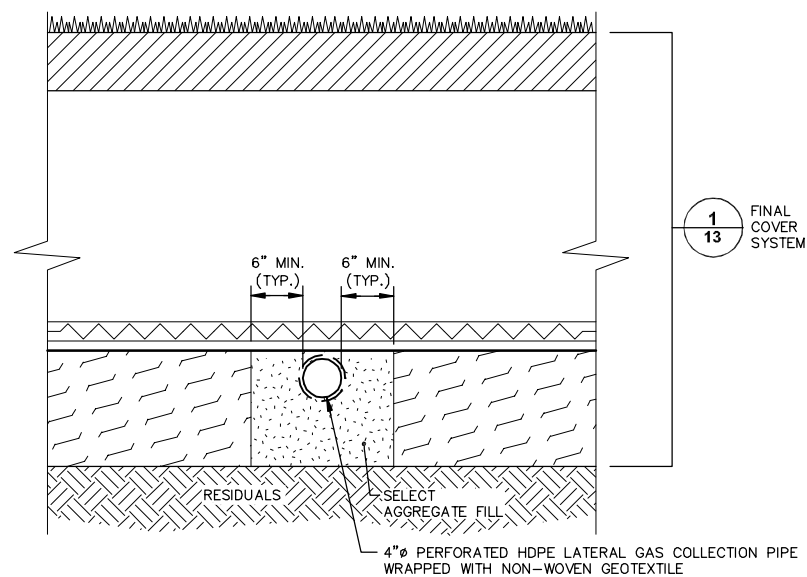
1. INLET DEBRIS SCREEN SHALL BE A SECTION OF GALVANIZED WOVEN WIRE MESH USED FOR FENCING THAT IS SECURELY ATTACHED TO PIPE AROUND INLET.

NOT TO SCALE		Professional Engineer's Name WILLIAM A. RANKIN		DRAFT NOT FOR CONSTRUCTION	 ARCADIS G&M OF MICHIGAN, LLC.	GEORGIA-PACIFIC LLC • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE - KALAMAZOO, MICHIGAN WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 FINAL REMEDIAL DESIGN		ARCADIS Project No. B0064581.0001.00670 B0064582.0001.00670		16		
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.		USE TO VERIFY FIGURE REPRODUCTION SCALE				Professional Engineer's No. 6201044550		Date MARCH 2011			ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse, NY 13214 Tel. 315.446.9120	
THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REPRODUCED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.		State MI				Date Signed		Project Mgr. PNM			Checked by PHB	



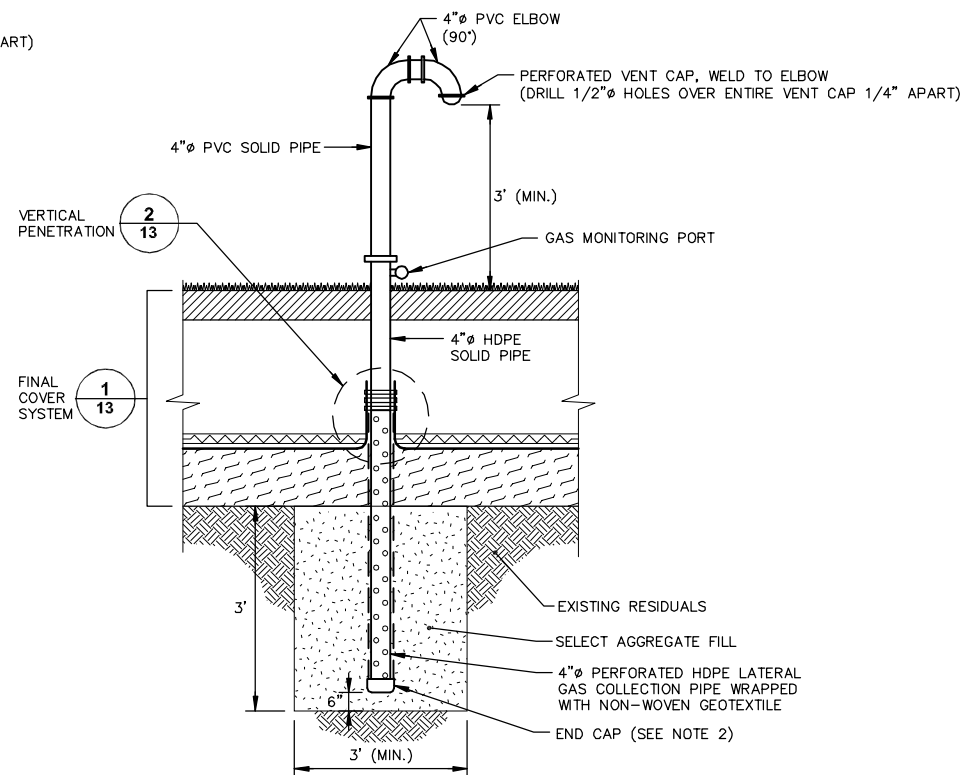
GAS VENT WITH LATERAL GAS COLLECTION PIPE

NOT TO SCALE



LATERAL GAS COLLECTION PIPE

NOT TO SCALE

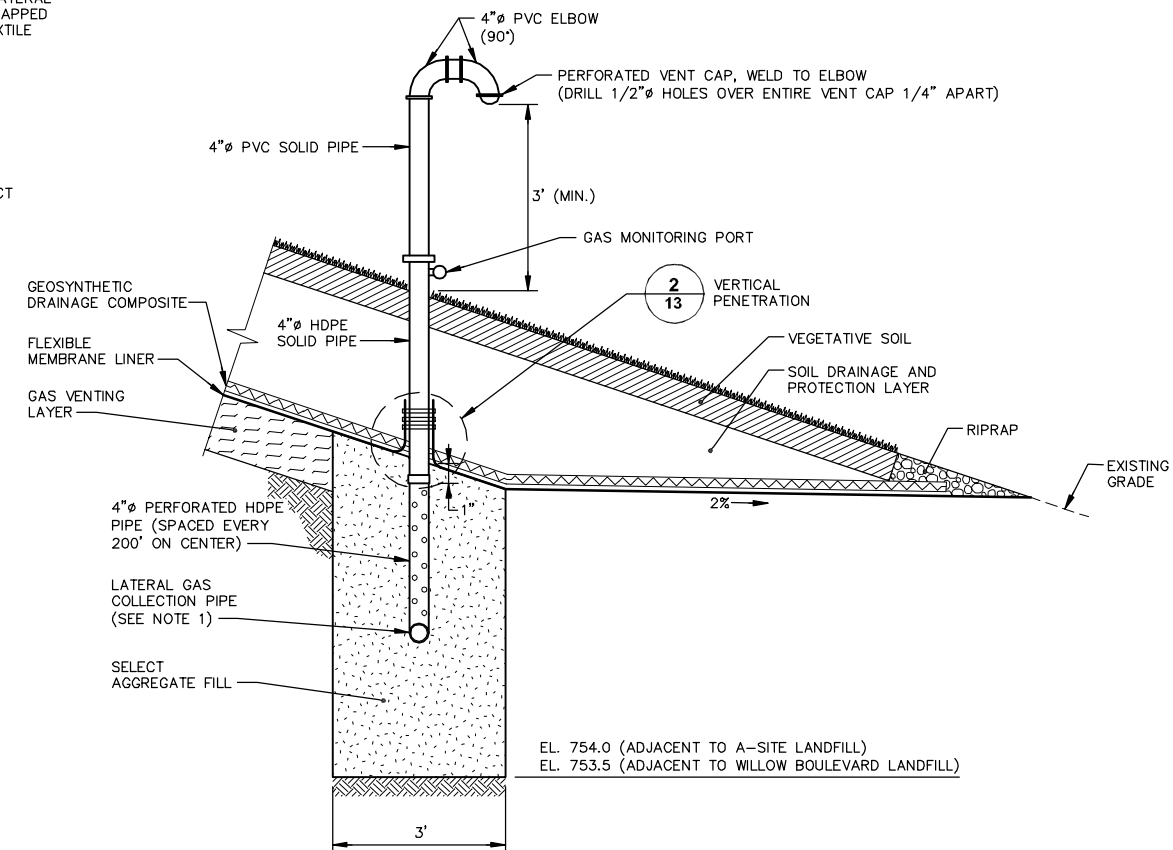


NOTES:

1. REFER TO DRAWING 6 FOR LOCATION OF GAS VENTS.
2. END CAP OF 4"Ø SLOTTED PIPE TO BE PERFORATED AND PLACED AT EDGE OF SELECT AGGREGATE FILL. CAP PERFORATIONS SHALL BE LESS THAN 1-INCH IN DIAMETER.
3. EXTRA GEOMEMBRANE MATERIAL SHALL BE PROVIDED AT THE VERTICAL PENETRATION TO ACCOMMODATE SETTLEMENT AND EXPANSION.

GAS VENT

NOT TO SCALE



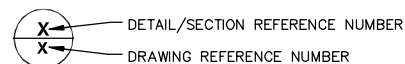
NOTE:

1. THE LATERAL GAS COLLECTION PIPE SHALL BE SET AT AN ELEVATION EQUAL TO 1 FOOT BELOW THE BOTTOM OF THE FINAL COVER SYSTEM OR ELEVATION 756.0, WHICHEVER IS DEEPER.

GAS CUTOFF TRENCH

NOT TO SCALE

LEGEND:



NOT TO SCALE

THIS BAR
REPRESENTS ONE
INCH ON THE
ORIGINAL DRAWING:

USE TO VERIFY
FIGURE
REPRODUCTION
SCALE

No.	Date	Revisions	By
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THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REPRODUCED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.

Professional Engineer's Name		
WILLIAM A. RANKIN		
Professional Engineer's No.		
6201044550		
State	Date Signed	P
MI		P
Designed by	Drawn by	CR
CAA	AGS	P

DRAFT
NOT FOR
CONSTRUCTION



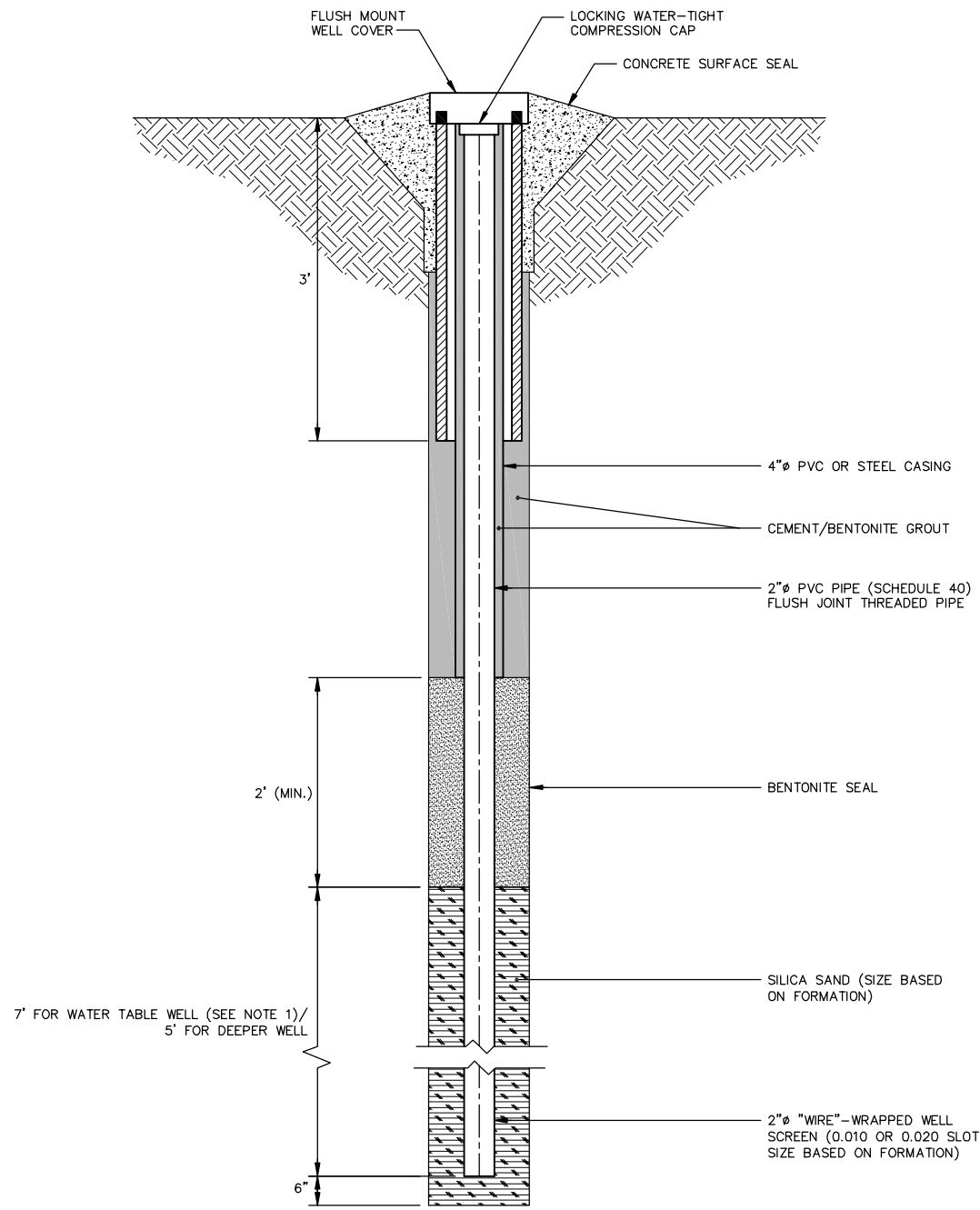
ARCADIS G&M OF MICHIGAN, LLC.

GEORGIA-PACIFIC LLC • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE - KALAMAZOO, MICHIGAN
WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 FINAL REMEDIAL DESIGN

LANDFILL GAS SYSTEM SECTIONS AND DETAILS

ARCADIS Project No. B0064581.0001.00670 B0064582.0001.00670
Date MARCH 2011
ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse, NY 13214 Tel. 315.446.9120

CITY: SYRACUSE DIV/GROUP: ENV/141 DB: B. GETTIS S. KOWALCZYK A. SAMIOS LD: A. SAMIOS PIC: B. DESHIELDS PM: P. MCGUIRE TM: J. ROBERTSON LVR: ON OFF REF: G:\E\ACAD\SYRACUSE\ACT\B0064581\0002\000670\DWG\CONTRACT\B64581\G28.dwg LAYOUT: 18 SAVED: 3/9/2011 4:26 PM ACADVER: 18.05 (LMS TECH) PAGES: 18 PLOT: 3/9/2011 4:26 PM BY: SAMIOS, ALEX

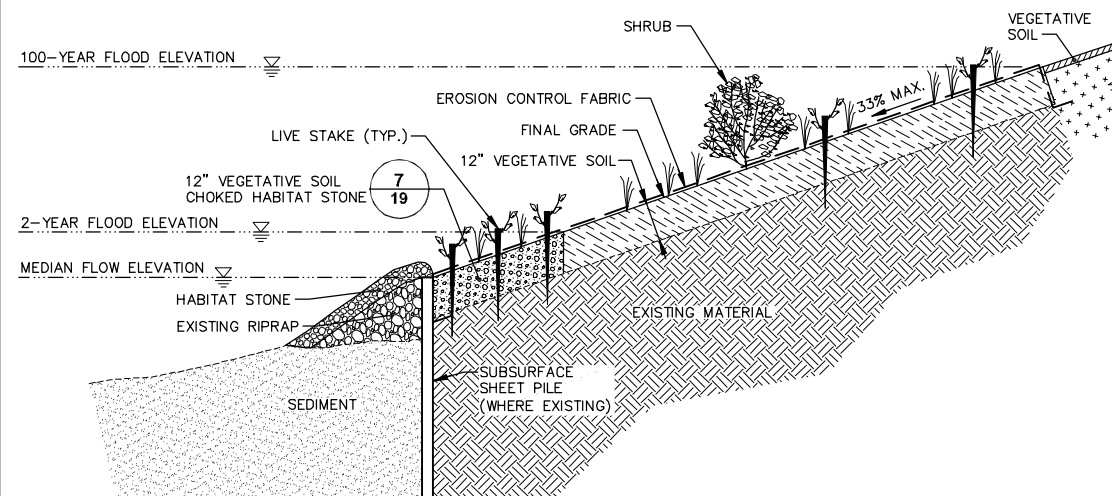


- NOTE:
1. WATER TABLE WELL SCREEN SHALL BE INSTALLED 2' ABOVE AND 5' BELOW THE WATER TABLE.

GROUNDWATER MONITORING WELL 1

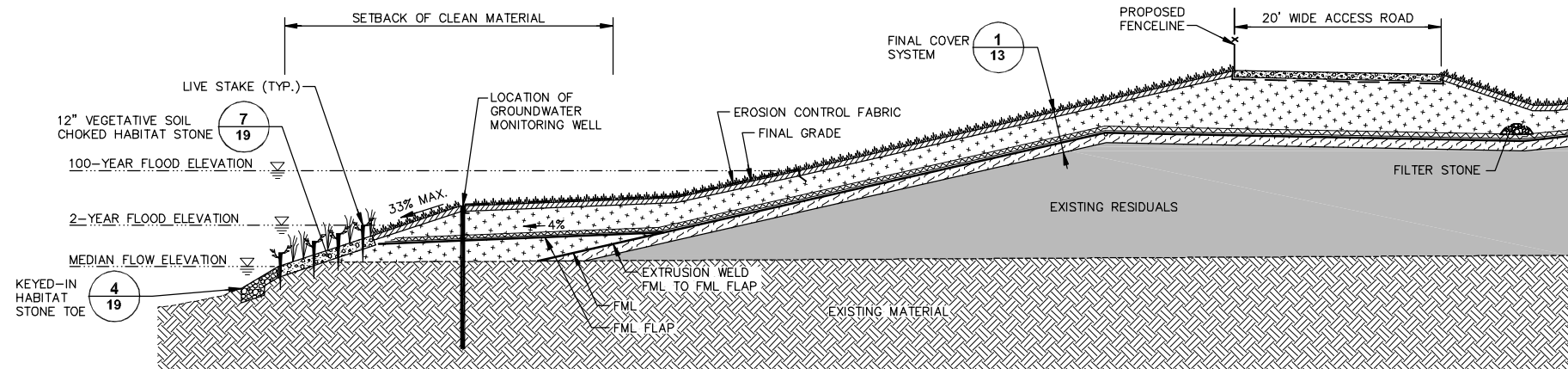
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NOT TO SCALE						Professional Engineer's Name WILLIAM A. RANKIN		DRAFT NOT FOR CONSTRUCTION	 ARCADIS G&M OF MICHIGAN, LLC.	GEORGIA-PACIFIC LLC • ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE - KALAMAZOO, MICHIGAN WILLOW BOULEVARD/A-SITE LANDFILL OPERABLE UNIT 2 FINAL REMEDIAL DESIGN		ARCADIS Project No. B0064581.0001.00670		18
						Professional Engineer's No. 6201044550						Date MARCH 2011		
						State MI				Date Signed		Project Mgr. PNM		
THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.		USE TO VERIFY FIGURE REPRODUCTION SCALE		No. Date Revisions By Ckd		Designed by JR				Drawn by AGS		Checked by LRC		ARCADIS 6723 Towpath Road P.O. Box 66 Syracuse, NY 13214 Tel. 315.446.9120



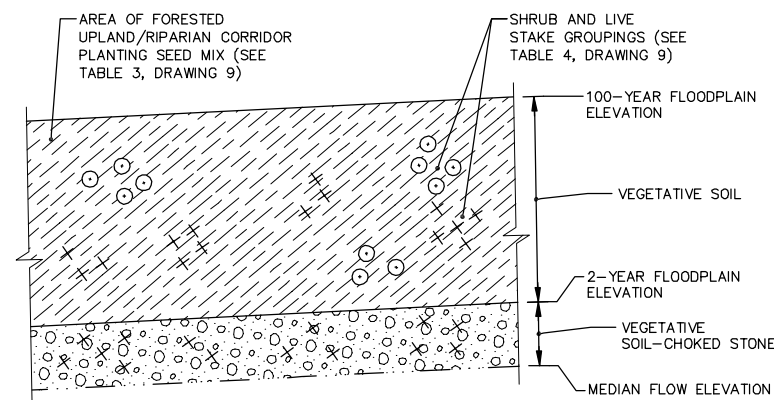
**TYPICAL RIPARIAN CORRIDOR RESTORATION SECTION -
A-SITE LANDFILL**

NOT TO SCALE



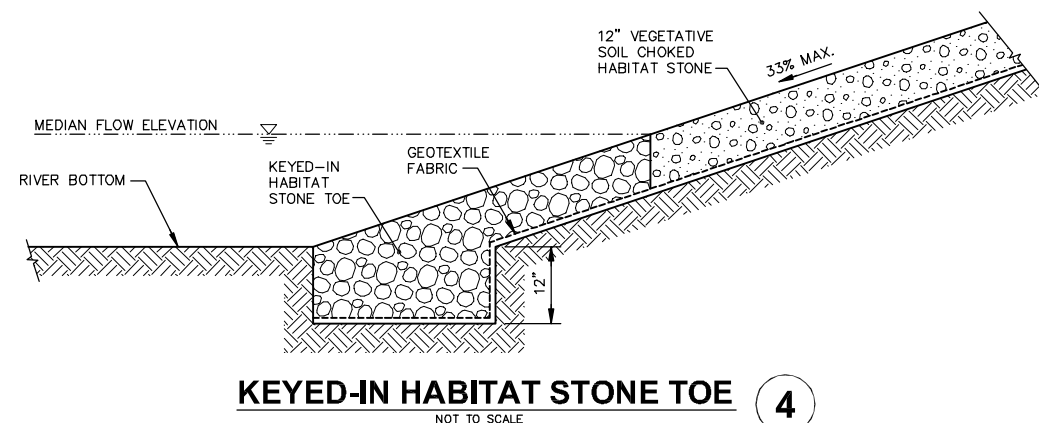
TYPICAL RIPARIAN CORRIDOR RESTORATION SECTION -
WILLOW BOULEVARD LANDFILL

NOT TO SCALE

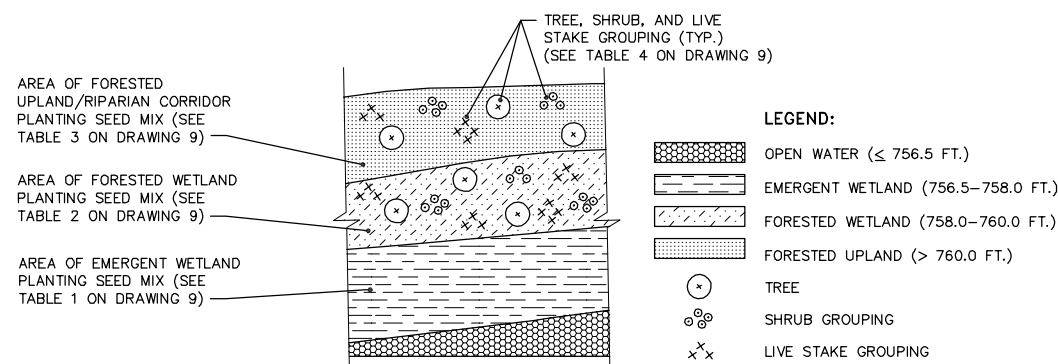


- NOTES:

1. STONE FILL SHALL BE PLACED FROM THE TOE OF BANK TO THE 2-YEAR FLOODPLAIN ELEVATION.
2. PERMANENT EROSION CONTROL FABRIC SHALL BE INSTALLED FROM THE MEDIAN FLOW ELEVATION TO THE 2-YEAR FLOODPLAIN ELEVATION.
3. NATIVE SHRUB SPECIES SHALL BE INSTALLED CONSISTENT WITH THE HABITAT TYPE. THE INTENT OF PLANTING IS TO SIMULATE NATURAL AND NON-GEOMETRIC PLANT GROUPINGS. THE RECOMMENDED SPACINGS ARE FOR COSTING AND ORDERING PURPOSES. ACTUAL FIELD PLANTINGS OF SHRUB AND LIVE STAKE GROUPINGS SHOULD BE STAGGERED HORIZONTALLY AND VERTICALLY ALONG THE AREAS OF RESTORATION. PLANT 3-5 LIVE STAKES SPACED 3-4 FEET APART IN EACH GROUPING. PLANT 3-4 SHRUBS SPACED 3-4 FEET APART IN EACH GROUPING.
4. AT A-SITE LANDFILL, SHRUBS AND LIVE STAKE GROUPINGS SHALL BE INSTALLED BETWEEN THE MEDIAN FLOW AND 100-YEAR FLOODPLAIN ELEVATIONS. AT WILLOW BLVD. LANDFILL, LIVE STAKE GROUPINGS SHALL BE INSTALLED BETWEEN THE MEDIAN FLOW ELEVATION AND LOWER LIMIT OF FML (APPROXIMATELY EL. 758.0).



KEYED-IN HABITAT STONE TOE **4**
NOT TO SCALE

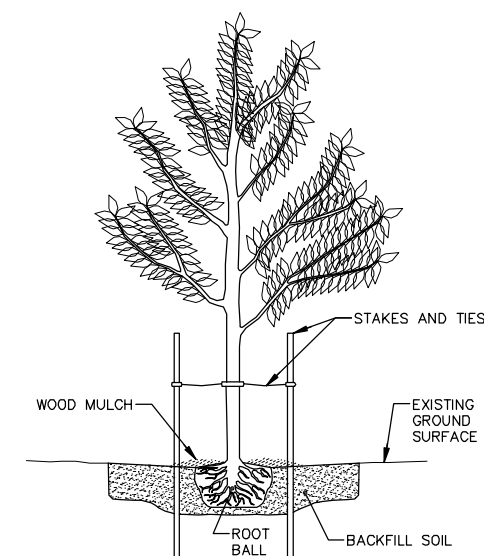


- NOTES:

1. STRAW MULCH SHALL BE PLACED WITHIN SEEDED AREAS.
2. NATIVE TREE AND SHRUB SPECIES SHALL BE INSTALLED CONSISTENT WITH THE HABITAT TYPE. THE INTENT OF PLANTING IS TO SIMULATE NATURAL AND NON-GEOMETRIC PLANT GROUPINGS. THE RECOMMENDED SPACINGS ARE FOR COSTING AND ORDERING PURPOSES. ACTUAL FIELD PLANTINGS OF TREES, SHRUB, AND LIVE STAKE GROUPINGS SHOULD BE STAGGERED HORIZONTALLY AND VERTICALLY ALONG THE AREAS OF RESTORATION. PLANT 3-5 LIVE STAKES SPACED 3-4 FEET APART IN EACH GROUPING. PLANT 3-4 SHRUBS SPACED 3-4 FEET APART IN EACH GROUPING. TREES MAY BE INTERMIXED WITH SHRUBS.

**TYPICAL WETLAND AND UPLAND PLANTING SCHEMATIC -
PLAN VIEW**

NOT TO SCALE



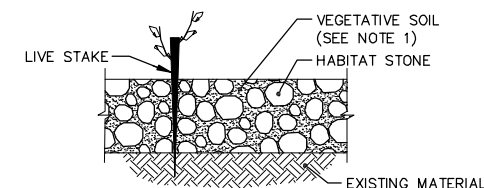
- NOTES:

1. TREE HOLE DIMENSIONS WILL BE DUG BASED ON ROOT BALL SIZE. THE TREE HOLE SHALL BE 2-3 TIMES THE DIAMETER AND 0.5 TIMES THE DEPTH OF THE ROOT BALL.
2. STAKES AND TIES WILL BE INSTALLED SUCH THAT 6-8 INCHES OF TREE SWAY IS PERMITTED.

TYPICAL TREE PLANTING DETAIL

NOT TO SCALE

6



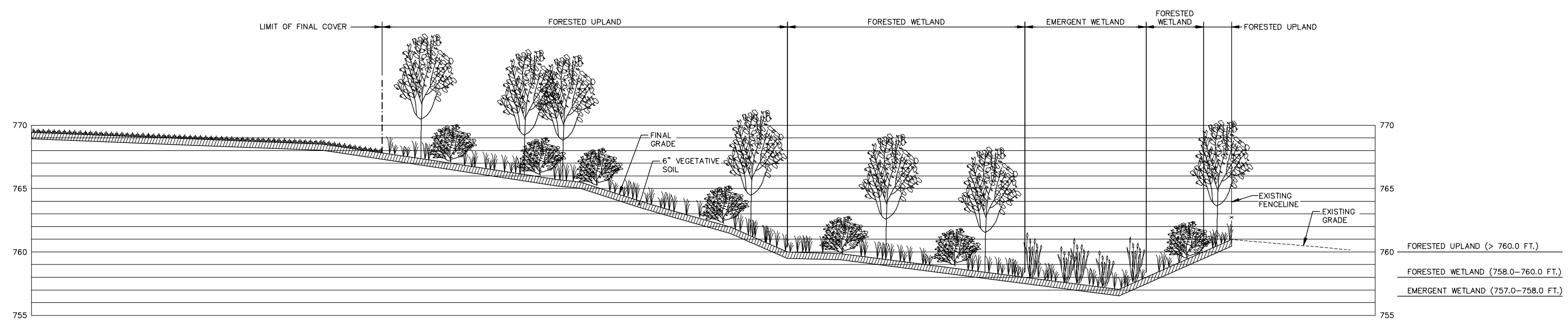
- NOTE:

1. VEGETATIVE SOIL TO BE LOOSELY DISTRIBUTED WITHIN STONE MATERIAL DURING STONE PLACEMENT. FINAL STONE SURFACE TO BE COVERED WITH VEGETATIVE SOIL TO AN INSTALLED THICKNESS OF 1 TO 2 INCHES ABOVE THE STONE. SURFACE OF VEGETATIVE SOIL TO BE COMPACTED TO THE EXTENT PRACTICABLE PRIOR TO SEED APPLICATION.

**VEGETATIVE SOIL CHOKED
HABITAT STONE SECTION** (7)

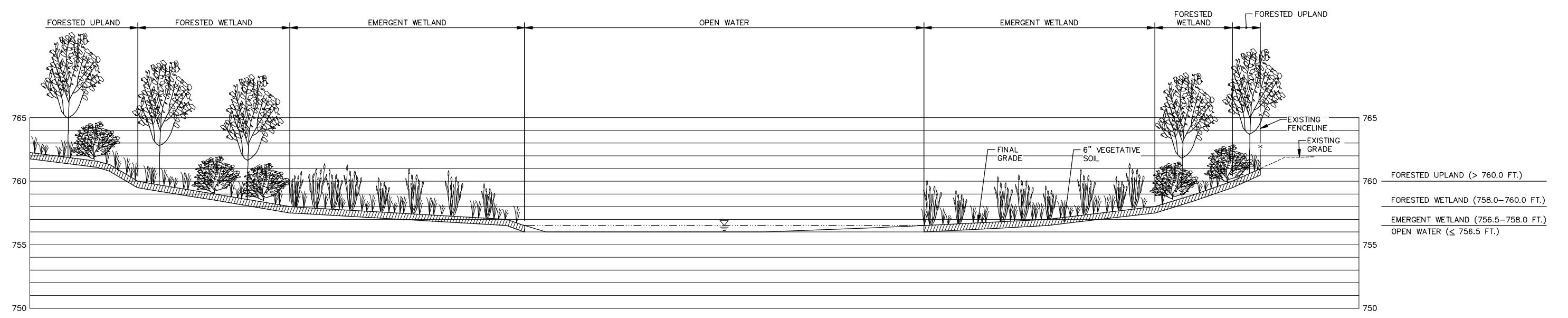
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							Professional Engineer's No. 6201044550					Date MARCH 2011												
							State MI					Date Signed	Project Mgr. PNM											
	No.	Date	Revisions			By	Ckd	Designed by MB	Drawn by AGS			Checked by MB												
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G:\E\ACAD\SYRACUSE\ACT\B0064581\0002\00670\DWG\CONTRACT\ACT\B64581\G29.dwg LAYOUT: 20 SAVED: 3/9/2011 10:26 AM ACADVER: 18.05 (LMS TECH) PAGES: 20 PLOTSETUP: PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 3/9/2011 10:26 AM BY: SAMIOS, ALEX
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TYPICAL WETLAND AND UPLAND RESTORATION
SECTION - A-SITE LANDFILL
NOT TO SCALE

1



TYPICAL RESTORATION SECTION - AREA EAST OF DAVIS CREEK
NOT TO SCALE

2

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